AMENDMENTS TO THE CLAIMS

- 1. (Currently Amended) A method of locating a source of a localized elevation on a substrate, comprising the steps of:
 - (a) measuring a first surface of a plurality of substrates placed separately on a chuck to obtain topography measurements including height (z), pitch and roll measurements;
 - (b) comparing said z, pitch and roll measurements to pre-defined limits, wherein detecting the presence of a localized elevation in a field on the first surface of the substrates is detected when any one of said z, pitch and roll measurements exceeds said pre-defined limit; and
 - (c) determining whether the source results from the chuck.
- 2. (Canceled)
- 3. (Canceled)
- 4. (Currently Amended) The method of elaim 3 claim 1, wherein said pre-defined limits comprise z equal to about 0.15 um and pitch equal to about 80 microradians.
- 5. (Currently Amended) The method of claim 2 claim 1, wherein the step (b) comprises detecting the presence of the localized elevation on at least three substrates.
- 6. (Original) The method of claim 5, wherein the step (c) comprises:

calculating a best linear regression fit line for each pair of pitch-z, roll-pitch and z-roll measurements in the field;

calculating R² for each of the calculated best linear regression fit lines; and

comparing R² to a threshold value.

- 7. (Original) The method of claim 6, wherein the threshold value is 0.95.
- 8. (Original) The method of claim 6, wherein when R² is greater than the threshold value, the source of the localized elevation is related to the chuck.
- 9. (Original) The method of claim 8, wherein the source of the localized elevation comprises a foreign material particulate attached to the chuck.
- 10. (Original) The method of claim 9 further comprising the step of cleaning the chuck.
- 11. (Original) The method of claim 6, wherein when R² is less than the threshold value, the source of the localized elevation is related to at least one of said substrates.
- 12. (Original) The method of claim 11, wherein the source of the localized elevation comprises damage on a second surface of said at least one of said substrates.
- 13. (Original) The method of claim 12, wherein the damage comprises a scratch.
- 14. (Original) The method of claim 11, wherein the source of the localized elevation comprises a foreign material particulate attached to the second surface of said at least one of said substrates.
- 15. (Original) The method of claim 14 further comprising the step of cleaning said at least one of said substrates.

- 16. (Original) The method of claim 1, wherein when the presence of the localized elevation is detected, issuing an alarm.
- 17. (Original) The method of claim 16, wherein when substrates are being processed in a tool, preventing processing of subsequent substrates until corrective action is taken to eliminate the source of the localized elevation.
- 18. (Original) The method of claim 1, wherein when the source of the localized elevation is related to the chuck, providing the X/Y coordinates of the source of the localized elevation so that corrective action on the chuck can be directed to a corresponding location on the chuck.
- 19. (Original) The method of claim 1, wherein X/Y coordinates of the source of the localized elevation are correlated to a step array map to determine which chips are affected by the localized elevation.
- 20. (Original) The method of claim 19, wherein the affected chips are further correlated to a known yield distribution by substrate region.
- 21. (Original) The method of claim 1 further comprising setting a limit for a maximum number of localized elevations that are detected so that a corrective action can be taken to eliminate the source of the localized elevation.
- 22. (Original) The method of claim 21, wherein the corrective action comprises the steps of stopping processing, cleaning the chuck to remove particulate matter and resuming processing; or stopping production, removing wafers from the tool to determine the source of the localized elevation and starting production with a new lot of wafers.

- 23. (Original) The method of claim 1 further comprising the step of patterning an image on said first surface using a photolithographic tool.
- 24. (Original) The method of claim 23, wherein the topography measurements are obtained from focus parameter data from the photolithographic tool.
- 25. (Original) The method of claim 23, wherein locating the source of the localized elevation is independent of imaging level or underlying optical qualities.
- 26. (Original) The method of claim 23, wherein each substrate is analyzed to detect the presence of a localized elevation.
- 27. (Original) A computer-readable program product for causing a computer to detect and characterize a defect on a surface of a first wafer, comprising:
 - a first program code means embodied in a computer useable medium for causing the computer to carry out a first set of measurements on a given surface of said first wafer placed on a chuck prior to carrying out an operation on said given surface;
 - a second program code means embodied in a computer useable medium for causing the computer to carry out a second set of measurements on said given surface of said first wafer while carrying out said operation on said given surface;
 - a third program code means embodied in a computer useable medium for causing the computer to determine a difference between said first set of measurements and said second set of measurements;
 - a fourth program code means embodied in a computer useable medium for causing the computer to carry out said first set of measurements, said

second set of measurements and said difference measurement on a second wafer placed on the chuck;

a fifth program code means embodied in a computer useable medium for causing the computer to carry out said first set of measurements, said second set of measurements and said difference measurement on a third wafer placed on the chuck; and

a sixth program code means embodied in a computer useable medium for causing the computer to compare said measurements from said first wafer, said second wafer, and said third wafer to determine whether a defect results from said chuck.

- 28. (Currently Amended) A program storage device readable by a machine, tangibly embodying a program of instructions executable by a machine to perform a method of locating a source of a localized elevation on a substrate, comprising the steps of:
 - (a) measuring a first surface of a plurality of substrates placed separately on a chuck to obtain topography measurements <u>including height</u> (z), <u>pitch and roll measurements</u>;
 - (b) comparing said z, pitch and roll measurements to pre-defined limits, wherein detecting the presence of a localized elevation in a field on the first surface of the substrates is detected when any one of said z, pitch and roll measurements exceeds said pre-defined limit; and
 - (c) determining whether the source results from the chuck.
- 29. (Canceled)
- 30. (Canceled)

- 31. (Currently Amended) The method of elaim 29 claim 28, wherein the step (b) comprises detecting the presence of the localized elevation on at least three substrates.
- 32. (Original) The method of claim 31, wherein the step (c) comprises: calculating a best linear regression fit line for each pair of pitch-z, roll-pitch and z-roll measurements in the field; calculating R² for each of the calculated best linear regression fit lines; and

comparing R² to a threshold value.

- 33. (Original) The method of claim 32, wherein when R² is greater than the threshold value, the source of the localized elevation is related to the chuck.
- 34. (Original) The method of claim 32, wherein when R² is less than the threshold value, the source of the localized elevation is unique to said at least one of said plurality of the substrates.